1100 New York Avenue, NW
Suite 640 West Tower
Washington, DC 20005

April 6, 2007

VIA ECFS

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: ***Ex Parte* Presentation**
WT Docket No. 96-86, WT Docket No. 06-169 and PS Docket No. 06-229
Alcatel-Lucent Upper 700 MHz Band MAPS Plan Proposal

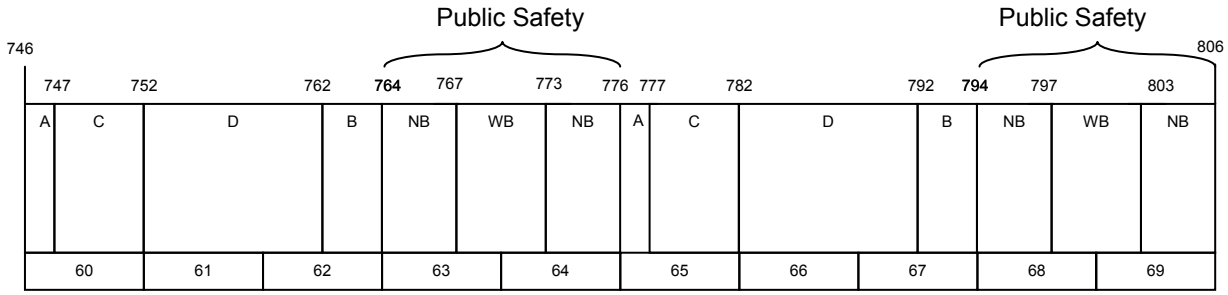
Dear Ms. Dortch:

Alcatel-Lucent ("ALU") is filing this *ex parte* letter with the Federal Communications Commission ("Commission") in the above-referenced dockets to propose an alternative band plan for the public safety portion of the Upper 700 MHz band—the Multimedia Access for Public Safety ("MAPS") plan. As set forth herein, ALU's proposed MAPS plan provides a preferable means of utilizing the largely vacant 700 MHz B block to provide broadband spectrum resources in the 700 MHz band. The MAPS plan offers improved spectral efficiency and flexibility in the 700 MHz public safety band. In contrast to other proposed 700 MHz band plans that call for the reallocation of the B block for use by public safety, the MAPS plan accomplishes the aforementioned objectives without disturbing the few remaining incumbent B block licensees or modifying the existing frequency allocations for the 700 MHz commercial C & D blocks. Accordingly, ALU respectfully requests that the Commission expeditiously adopt the MAPS plan for reconfiguration of the Upper 700 MHz band.

I. COMPARISON OF THE MAPS PLAN TO THE EXISTING 700 MHZ BAND PLAN

Existing 700 MHz band plan. The 700 MHz band incorporates current analog television stations 60-69, which includes the 60 MHz of spectrum between 746 MHz and 806 MHz. The existing 700 MHz band plan is set forth below:

Current 700 MHz Band



Block	Allocation	Frequencies	Total Bandwidth	Pairing
A	Guard Band	746-747/776-777 MHz	2 MHz	2 x 1 MHz
B	Guard Band	762-764/792-794 MHz	4 MHz	2 x 2 MHz
C	Commercial	747-752/777-782 MHz	10 MHz	2 x 5 MHz
D	Commercial	752-762/782-792 MHz	20 MHz	2 x 10 MHz
NB	Public Safety Narrowband	764-767/794-797 MHz 773-776/803-806 MHz	12 MHz	4 x 3 MHz
WB	Public Safety Wideband	767-773/797-803 MHz	12 MHz	2 x 6 MHz

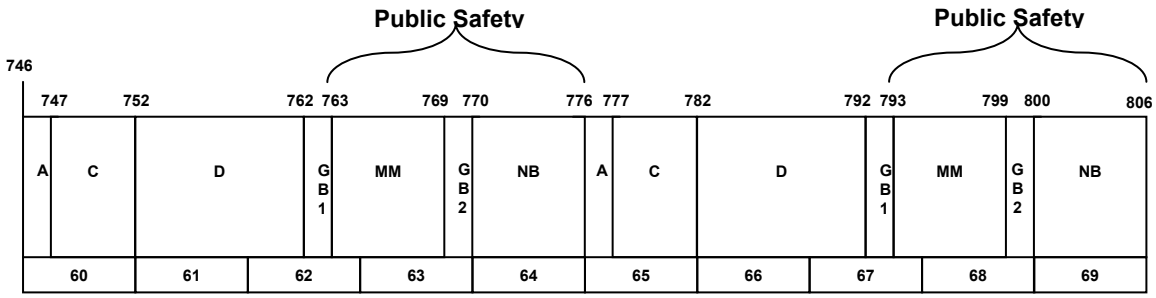
MAPS plan. ALU's MAPS plan proposes to reconfigure the 700 MHz band as follows:

(1) consolidate the public safety narrowband channels in a contiguous block at the upper ends of the paired public safety portions of the 700 MHz band, move the public safety wideband block to the lower ends of the paired public safety portions of the 700 MHz band, and repurpose the wideband block for multimedia use, including the deployment of cellular-type architectures; and

(2) reallocate recovered B block spectrum for public safety use by (i) designating 1 MHz paired of the spectrum for public safety use as an internal guard band separating the public safety narrowband and public safety multimedia blocks, and (ii) designating 1 MHz paired to be used as an external guard band between the commercial D block and the public safety multimedia block. By designating 1 MHz paired of recovered B block spectrum for public safety use, the public safety community gains access to additional spectrum not available under the current 700 MHz band plan. Public safety agencies would retain sole control over this spectrum and, depending upon their interference protection needs, could vary the size and use of the internal guard band by region.

The MAPS plan is set forth below:

Multimedia Access for Public Safety Band Plan



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A	Guard Band	746-747/776-777 MHz	2 MHz	2 x 1 MHz
C	Commercial	747-752/777-782 MHz	10 MHz	2 x 5 MHz
D	Commercial	752-762/782-792 MHz	20 MHz	2 x 10 MHz
GB1	External Guard Band	762-763/792-793 MHz	2 MHz	2 x 1 MHz
MM	Public Safety Multimedia	763-769/793-799 MHz	12 MHz	2 x 6 MHz
GB2	Public Safety Internal Guard Band	769-770/799-800 MHz	2 MHz	2 x 1 MHz
NB	Public Safety Narrowband	770-776/800-806 MHz	12 MHz	2 x 6 MHz

II. THE MAPS PLAN ENABLES DEPLOYMENT OF ADVANCED COMMUNICATIONS TECHNOLOGIES IN THE 700 MHZ PUBLIC SAFETY BAND

The MAPS plan proposes to allocate 12 MHz of 700 MHz spectrum (*i.e.,* a paired 6 MHz block) for interoperable multimedia uses by the public safety community. First responders currently do not have access to the advanced mobile communications capabilities widely available to American consumers because such advanced mobile communications applications are not adequately supported by existing public safety communications technologies. Further, the public safety community continues to struggle with cross-jurisdictional interoperability. Deployment of broadband networks in the public safety multimedia block can overcome these obstacles and therefore, the Commission should channelize the 700 MHz public safety multimedia block primarily for broadband use.

Comments filed in the Commission's ongoing proceedings regarding the 700 MHz public safety band[1] overwhelmingly demonstrate that commercial broadband technologies offer clear

[1] *See* Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010, WT Docket No. 96-86, *Eighth Notice of Proposed Rulemaking*, 21 FCC Rcd 3668 (2006) (seeking comment on whether and how the public safety portion of the 700 MHz band should be modified to accommodate interoperable broadband communications) ("*Eighth NPRM*").; Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of

and significant advantages over the alternatives, such as the wideband technologies for which the data portion of the 700 MHz public safety band currently is channelized. Specifically, commercial broadband technologies offer higher data rates, greater throughput capacity, and superior range than wideband technologies.[2] Commercial broadband technologies also are much more cost effective because they allow the public safety community to leverage the commercial wireless industry's massive manufacturing economies of scale, as well as the substantial capital resources devoted by the commercial wireless industry to research and development. In addition, commercial broadband technologies are robustly and seamlessly interoperable, both across adjacent geographic regions and across multiple generations of equipment, without the need for extensive cross-jurisdictional coordination efforts.[3] Accordingly, consistent with the extensive record compiled in WT Docket No. 96-86 and with the Commission's own proposal in its ninth notice of propose rulemaking in PS Docket No. 06-229,[4] the Commission should channelize the MAPS plan multimedia block primarily for broadband use.[5]

III. THE MAPS PLAN PROMOTES MAXIMUM SPECTRAL EFFICIENCY AND FLEXIBILITY

Spectral efficiency. The MAPS plan is spectrally efficient. Spectrum resources can be used most efficiently when channels using the same technology are contiguous and when technologies are placed, when possible, adjacent to other similar technologies that are less likely to receive and cause interference.[6] Taking advantage of this tenet, the MAPS plan, like other proposed 700 MHz band reconfigurations, consolidates the narrowband public safety channels into a single block on one end of the 700 MHz public safety band and places the data portion of

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the Commission's Rules, WT Docket 06-169, *Notice of Proposed Rulemaking*, 21 FCC Rcd 10413 (2006) (requesting comment on changes to the rules applicable to current and future Upper 700 MHz guard band licensees) ("*Guard Band NPRM*"); Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-226, *Ninth Notice of Proposed Rulemaking*, 21 FCC Rcd 14837 (2006) (requesting comment on the Commission's proposal to adopt rules and policies necessary to deploy a nationwide, interoperable, broadband public safety network licensed to and managed by a single broadband licensee) ("*Ninth NPRM*").

[2] *See*, *e.g.*, Comments of Lucent Technologies, Inc., WT Docket 96-86, 13-21 (filed June 6, 2006) ("ALU Comments"); Reply Comments of Lucent Technologies, Inc., WT Docket 96-86, 2-14 (filed July 6, 2006) ("ALU Reply Comments").

[3] *See*, *e.g.*, ALU Comments, at 21-22 and Exhibit C-1; ALU Reply Comments, at 25-22.

[4] *See Ninth NPRM*, at ¶ 4.

[5] As set forth in Section III (*Enhanced Flexibility*) of the text, to the extent that the Commission desires to preserve a limited number of 50 kHz to 150 kHz wideband channels in the public safety multimedia block, such channels can be accommodated throughout most of the country in the 1 MHz guard band between the public safety multimedia block and narrowband block at 769-770 MHz and 779-800 MHz. Such wideband channels, however, may not be able to be accommodated in regions bordering Canada. *See* Appendix A.

[6] *See* Federal Communications Commission, Spectrum Task Force Report, ET Docket No, 02-135, 22 (filed Nov. 15, 2002).

the band (*i.e.,* the public safety multimedia block under the MAPS plan) on the other end, rather than sandwiching the data portion of the band between two blocks of narrowband pubic safety spectrum. This configuration avoids the need for guard bands on both sides of the data block to protect against interference between the data block and narrowband communications, thereby wasting less spectrum on guard bands.

Further, the MAPS plan proposes to locate the public safety data channels at the lower end of the public safety multimedia block, adjacent to spectrum allocated to commercial broadband services that are likely to use similar technologies and therefore pose less of a threat of interference. The MAPS plan also proposes that the Commission authorize public safety agencies to deploy cellular-type architectures, *i.e.,* low-power, low-height infrastructure, in the public safety multimedia block. A relaxation of the out-of-band emission rules applicable to the commercial C and D block emissions falling into the public safety block would therefore be warranted. In particular, the MAPS plan would enable the current 76+10logP rule to be modified to a 43+10logP rule. The aforementioned proposals eliminate the need for a 2 MHz guard band between the commercial D block and the 700 MHz public safety multimedia block. By reducing the B block guard band to 1 MHz, the MAPS plan provides public safety with an additional 1 MHz of spectrum that would serve primarily as an internal guard band between the public safety multimedia and narrowband blocks. Public safety agencies would retain sole control over this additional spectrum and thus could vary the size and use of the guard band by region and depending on their interference protection needs. As important, by providing public safety with additional spectrum, the public safety community would not be required to cannibalize any of its paired 6 MHz multimedia or narrowband blocks to create a guard band between the blocks.

Enhanced flexibility. The MAPS plan also offers enhanced flexibility with respect the broadband technology deployed in the data portion of the 700 MHz public safety band. The 1 MHz guard band between the public safety narrowband and multimedia blocks and between the commercial D block and the 6 MHz public safety multimedia block will allow the Commission to designate confidently four 1.25 MHz broadband channels or one 5 MHz broadband channel in the block throughout the vast majority of the country without concern that the broadband operations will create or receive interference from the commercial D block or public safety narrowband operations.[7] This will allow first responders to select from a greater variety of broadband technologies than would otherwise be possible, including technologies, such as W-CDMA, that require a 5 MHz channel.

In addition to enabling flexible broadband deployments, the MAPS plan provides public safety agencies with the option of deploying wideband technologies. Specifically, first responders may operate wideband networks using spectrum in the 1 MHz internal guard band between the public safety multimedia and public safety narrowband blocks (*i.e.,* 769-770 MHz

[7] Appendix A sets forth possible 1.25 MHz and 5 MHz broadband channel plans for the proposed public safety multimedia block taking into account international coordination concerns that arise in border areas as a result of Canadian use of certain 700 MHz spectrum. As explained in Appendix A, it may be possible to obtain only three 1.25 MHz broadband channels in certain border regions adjacent to Canada.

and 799-800 MHz). Although the MAPS plan can support wideband technologies, it is critical that wideband technologies are not deployed in the contiguous broadband channels that comprise 5 MHz of the 6 MHz multimedia block. It must be emphasized that such mixed use of wideband and broadband technologies in the broadband channels will undermine the otherwise robust nationwide interoperability that can be accomplished using the spectrum.[8]

III. THE MAPS PLAN WILL NOT DISRUPT CURRENT B BLOCK LICENSEES OR C & D BLOCK SPECTRUM ALLOCATIONS

No Effect on Incumbent B Block Licensees. Under the MAPS plan, the Commission would reallocate for public safety use only the B block spectrum that was recovered by the Commission from Nextel via the 800 MHz band reconfiguration proceeding, but will not disrupt incumbent B block licensees.[9] As depicted in the map of U.S. major economic areas ("MEAs") set forth below, the recovered B block spectrum currently held by the Commission accounts for a substantial majority of all B block spectrum and covers the vast majority of the U.S. population—approximately 91%.[10] Further, as demonstrated below, the Commission currently

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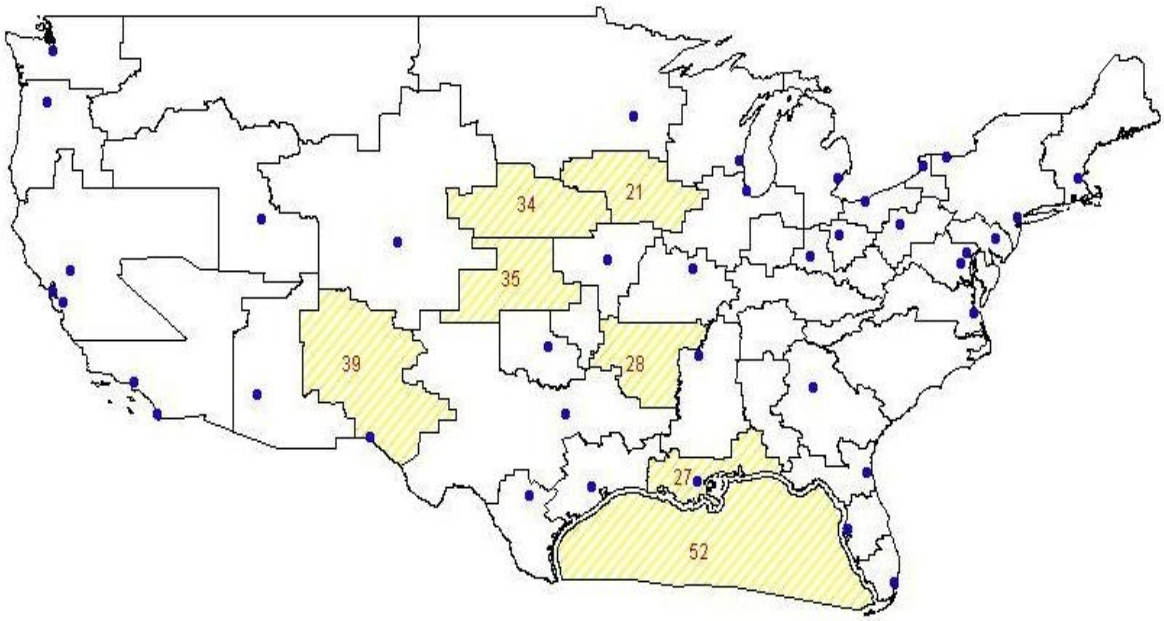
[8] *See* Comments of Lucent Technologies, Inc., EB Docket No. 06-119, 8-9 (filed Aug. 7, 2006) (discussing challenges with interoperability inherent to a band plan that authorizes mixed use of wideband and broadband technologies in the same spectrum).

[9] *See* Applications of Nextel Communications, Inc. and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations, *Memorandum Opinion and Order*, 20 FCC Rcd 13967 (2005). The Commission previously considered reallocating the B block spectrum for public safety use but deferred making a decision with respect to this issue. The Commission was concerned at the time that such an allocation might result in increased interference to public safety narrowband communications because the purpose of the B block was to serve as a guard band between public safety narrowband channels and the commercial D block. *See Guard Band NPRM*, at ¶39 ("We also seek comment on Nextel's recommendation in the 800 MHz proceeding that the Commission rededicate the relinquished spectrum for exclusive public safety use. We seek comment on whether there have been any technical or marketplace developments that may alleviate the Commission s concern that re-designating the spectrum for public safety applications may result in increased interference to public safety."). The Commission's prior concern is fully alleviated by the MAPS plan. The 700 MHz reconfiguration proposed under the MAPS plan avoids the need for the B block to serve as a guard band between public safety narrowband channels and the commercial D block by (i) moving the public safety narrowband block to the end of the public safety portion of the 700 MHz band where it is protected against interference from the commercial C block by the A block guard band; and (ii) placing a new public safety multimedia block adjacent to the commercial D block and including an internal guard band in the public safety multimedia block. Further, the new public safety multimedia block will use technologies similar to those used by commercial D block licensees and therefore are less prone to interference from the D block licensees than public safety narrowband communications.

[10] See 2000 U.S. Census data for MEAs located at http://wireless.fcc.gov/auctions/data/maps/cntysv2000_census.xls.

holds the B block spectrum in virtually every major metropolitan area and all but 10 of the 52 MEAs in the United States.

Major Economic Areas Currently Licensed to B Block Licensees (shaded)



Notes: Major metropolitan areas with populations in excess of 500,000 are marked above. B block licenses also currently are outstanding for MEA47 (Alaska), MEA51 (American Samoa), and MEA49 (Guam and Northern Mariana), which are not shown on the map above.

Consequently, by reallocating the B block spectrum currently held by the Commission for public safety use, ALU's MAPS plan provides additional multimedia spectrum resources to the vast majority of the country and, in particular, to the first responders that need them most—those operating in major metropolitan areas where the population is the densest and public safety spectrum is used most intensively. Further, the MAPS plan accomplishes this result without requiring the Commission to disturb the remaining B block licensees,[11] which primarily hold spectrum rights in rural, less populous areas of the country where public safety agencies are less spectrum constrained.[12]

[11] To date, much of the currently licensed B block spectrum remains fallow. *See Eighth NPRM*, at ¶ 13. Accordingly, the Commission may decide at a later date whether the current B block licensees should be permitted to surrender their licenses to the Commission in exchange for appropriate financial compensation or substitute spectrum resources so that the remaining B block spectrum can be reallocated in accordance with the MAPS plan. However, the Commission should defer this issue to a later date to avoid disrupting the upcoming C & D block auctions.

[12] Because B block spectrum currently is licensed in these MEAs, public safety multimedia applications will run in a slightly smaller multimedia block shifted 1 MHz upwards

No modification of the commercial C & D Block is required. Importantly, the advantages of the MAPS plan are readily achievable without any modification to the commercial C & D blocks, which are required by statute to be auctioned in the near future. Specifically, the Commission is required by the Deficit Reduction Act of 2005 to auction this spectrum beginning no later than January 28, 2008 and the auction is required to be completed no later than June 30, 2008.[13] Prior to commencing an auction, the Commission generally establishes service rules for the spectrum licenses and procedures for the auction. Further, potential bidders thereafter require an opportunity to obtain financing to facilitate their participation in the auction and such financing is often dependent on the auction service rules. Accordingly, any new modifications to the C & D block at this late date could jeopardize the Commission's ability to comply with the statutory auction deadline and may delay the deployment of commercial facilities in this spectrum, which the Commission has opined is contrary to the public interest.[14] Moreover, any delay in commencing the auction will postpone access by the public safety community to the $1 billion of auction proceeds that Congress has allocated for public safety to, *inter alia*, improve their communications interoperability.[15]

In addition, as further explained in Appendix A, any modification of the C& D blocks that results in the elimination or reduction of the A block guard band at 746-747 MHz could result in harmful interference between the Upper 700 MHz band and Lower 700 MHz band commercial C blocks. Accordingly, even if the C & D blocks could be modified in time to avoid disrupting the upcoming auction of this spectrum, there is an independent rationale for refraining from moving these blocks to the extent that such modification would affect the A block. Thus, rather than further modifying the C & D blocks as part of the 700 MHz band reconfiguration, the Commission should make every effort to accomplish such reconfiguration without modifying the

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(*i.e.,* 764-770 MHz paired with 794-800 MHz) but the public safety narrowband block will remain the same (*i.e.,* 770-776 MHz and 800-806 MHz). If, as a result, traffic demand exceeds the capacity of the available broadband channels in certain major metropolitan areas in these MEAs, such as New Orleans, LA, capacity enhancing techniques can be utilized to extend the capacity of the available broadband channels, such as using more than three sectors per cell site or deploying intelligent antennas.

[13] Deficit Reduction Act of 2005, Pub. L. No. 109-171, 120 Stat. 4 (2006) (mandating that the Commission commence auction 30 MHz of Upper 700 MHz spectrum by January 28, 2008 and complete such auction by June 30, 2008) ("*Deficit Reduction Act*").

[14] *See Eighth NPRM,* at ¶ 17 ("We also tentatively conclude that any decision to shift the existing Upper 700 MHz band plan in a way that affects 'recovered analog spectrum' within the DTV transition would need to be made in time to allow the Commission to conduct the auction of recovered spectrum in accordance with the relevant statutory requirements."); *see also id* at ¶ 47 ("[T]he recovered spectrum is a valuable resource promising numerous public benefits, and thus should be put to its intended new uses as soon as possible.").

[15] *See Deficit Reduction Act*, § 3006 (authorizing the establishment and implementation of a grant program to "assist public safety agencies in the acquisition of, deployment of, or training for the use of interoperable communications systems that utilize, or enable interoperability with communications systems that can utilize, reallocated public safety spectrum" and allocating $ 1 billion to carry out such program).

C & D blocks. The MAPS plan accommodates this objective through the use of a portion of the B block.

IV. THE MAPS PLAN WILL NOT IMPOSE SIGNIFICANT RADIO RETUNING COSTS AND DOES NOT RAISE INTERNATIONAL COORDINATION ISSUES

In its eighth notice of proposed rulemaking in WT Docket 96-86, the Commission stated that any band plan for reconfiguring the 700 MHz public safety band that involves movement of the narrowband block should address two issues: (i) funding the costs of retuning or replacement of radios already deployed to operate in the existing narrowband block; and (ii) Canadian and Mexican border region coordination issues.[16] Adoption of the MAPS plan will not require substantial additional expense to retune narrowband radios already deployed for use in the 700 MHz narrowband public safety block. Further, the MAPS plan does not raise any international coordination concerns.

Retuning previously deployed narrowband radios. The benefits of the MAPS plan can be realized without significant costs to public safety. There is general consensus among commenters that to date there has been relatively little deployment of narrowband equipment in the 700 MHz public safety band.[17] To the extent narrowband 700 MHZ radios have been deployed by first responders, they generally can be retuned through an inexpensive software upload. Moreover, because most deployed dual-band radios have not yet been programmed to operate on the 700 MHz band, there would be no additional incremental expense to public safety to tune such radios to operate in accordance with the MAPS plan rather than the existing narrowband spectrum band.[18] Therefore, the benefits that the MAPS plan will provide to public

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[16] *See Eighth NPRM,* at ¶ 46 ("We agree with commenters . . . that the potential costs of moving the narrowband channels and reprogramming existing 700/800 MHz public safety radios, as well as the possible need to negotiate amended or new agreements with Canada and Mexico, are significant issues that would have to be resolved before the Commission could adopt a channel plan that shifts the narrowband channels. . . . We tentatively conclude, therefore, that it would not be appropriate to engage in any shifting of the narrowband channels in the 700 MHz public safety band unless these issues are resolved expeditiously.").

[17] *See*, *e.g.*, Report of the Technical Working Group, WT Docket No. 06-169, 8 (filed Oct. 23, 2006) (noting that the cost to retune any deployed 700 MHz systems are "minor") ("*TWG Report*"); Comments of Motorola, Inc., WT Docket No. 06-169, 9 (noting that, although Motorola was initially concerned that the costs for consolidating the narrowband channels could escalate into the tens of millions of dollars, after studying the issue, Motorola believes that the cost of the transition should be relatively small); Comments of National Public Safety Telecommunications Council, WT Docket No. 06-169, 8 ("The costs of moving the narrowband block appear to be significantly less than originally noted.").

[18] *See, e.g., Ex parte* letter from Steve B. Sharkey, Director, Spectrum and Standards Strategy, Motorola, Inc., to Marlene H. Dortch, Secretary, Commission, dated March 7, 2007 (noting that 750,000 to 800,000 700/800 MHz radios have been deployed, they can be retuned without a change in hardware, and many have been fielded but are not yet operating and will need to be programmed irrespective of whether the 700 MHz public safety band is reconfigured);

safety far outweigh any relatively modest cost that will result from retuning 700 MHz narrowband radios.

International coordination. The MAPS plan will not require international coordination beyond that which is already likely to be required as a result of allowing broadband technologies in the 700 MHz public safety band. With respect to the Mexican border region, international coordination for public safety's use of the Upper 700 MHz band effectively has been completed and the MAPS plan is consistent with the applicable U.S.-Mexico treaty.[19] In addition, with respect to the Canadian border region, narrowband operations in the MAPS plan narrowband block will be constrained due to the use of the analog televisions channels 64 and 69 by Canada. Accordingly, in the Canadian border region, U.S. narrowband operations will be required to be moved to the MAPS plan guard band between the public safety multimedia block and narrowband block at 769-770/799-800 MHz.[20] Use of this block for domestic narrowband public safety communications is consistent with the Canadian public safety narrowband allocation.[21] As further explained in Appendix A, depending on a variety of factors, this may constrain in the Canadian border region the availability of a full 5 MHz broadband channel and/or a fourth 1.25 MHz broadband channel in the public safety multimedia block. However, subject to a few exceptions, the U.S.-Canadian border region is not densely populated and therefore it seems likely that first responders operating in this region will not require access to as much broadband spectrum as will be required in more densely populated regions in the United States. In any event, Industry Canada has stated that its forward-looking 700 MHz terrestrial, non-broadcast radiofrequency allocation policy is to align its spectrum allocations with U.S. allocations.[22] Consistent with this policy, Canada has at least addressed its intention to ultimately clear

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TWG Report, at 8 (stating that the Technical Working Group found "no incremental costs attributable to the BOP plan. . . would be incurred in programming [dual-band] radios" because such radios "would have to be programmed to operate on 700 MHz in any case").

[19] *See* Protocol Between the Department of State of the United States of America and the Secretariat of Communications and Transportation of the United Mexican States Concerning the Allotment and Use of the 698-806 Band for Terrestrial Non-Broadcasting Radiocommunication Services Along the Common Border, November 8, 2006.

[20] Such an arrangement will require the definition of 160 additional 6.25 KHz narrowband channels in the narrowband block. In particular, the current numbering plan for the 960 narrowband channels would start at 161 instead of 1.

[21] *See* Industry Canada, Policy for the Use of 700 MHz Systems for Public Safety Applications and Other Limited Use of Broadcasting Spectrum, 1 (June 2006) (allocating analog television broadcast channels 63 and 68 (*i.e.,* 764-770 MHz and 794-800 MHz) for narrowband terrestrial public safety use in Canada).

[22] *See id* at 4 ("The Department concludes that harmonization with the U.S. band plan is appropriate from both domestic and international radio interoperability perspectives as well as the radio equipment cost benefits that accrue from a common radio equipment manufacturing market.").

Canadian broadcast television channels 64 and 69 (*i.e.,* 770-776 MHz and 800-806 MHz),[23] at which time the Canadian Upper 700 MHz narrowband allocation will be consistent with the MAPS plan without requiring any border-region adjustment to the MAPS plan.

V. CONCLUSION

As set forth herein, ALU's proposed MAPS plan offers a preferable means by which to introduce interoperable broadband channels into the data portion of the Upper 700 MHz public safety band in a flexible spectrally efficient manner. The record before the Commission clearly demonstrates that the American public safety community increasingly requires the robust interoperability and superior capability of mobile broadband technologies. Further, unlike other proposed 700 MHz reconfiguration plans, the MAPS plan accomplishes this objective without disrupting the incumbent B block licensees or requiring modification to the commercial C & D block allocations. In addition, the MAPS plan will not impose significant expense to retune narrowband radios already deployed in the 700 MHz band or raise substantial international coordination issues. Accordingly, ALU respectfully requests the Commission expeditiously to adopt the MAPS plan for reconfiguration of the Upper 700 MHz band.

This letter is filed pursuant to Section 1.1206 of the Commission's rules and should be treated as a written *ex parte* communication.

Sincerely,

/s/ Michael McMenamin
Michael McMenamin, Esq.
Senior Manager
Alcatel-Lucent
1100 New York Ave., NW
Suite 640
Washington, DC 20005

[23] *See id* at 5 ("It is anticipated that a few years will be needed for the digital transition of television stations to lower channels before another 6+6 MHz can be made available, or for television channels 64 and 69 to become available.").

Alcatel·Lucent

APPENDIX A

I. BROADBAND CHANNELIZATION FOR THE MAPS PLAN PUBLIC SAFETY MULTIMEDIA BLOCKS

A number of different broadband channelization plans can be used for the public safety multimedia block under the MAPS plan depending on whether an internal guard band is required along the 763 MHz border of the paired 6 MHz public safety multimedia blocks. Channelization plans 1 and 2 set forth below depict 1.25 MHz channels, such as would be used with CDMA-based commercial broadband technologies like EVDO rev.A or OFDM-based technologies like UMTS-LTE or 802.16e, and channelization plans 3 and 4 depict 5 MHz channels, such as would be used with W-CDMA or 802.16e.[24] The difference between plans 1 and 2 and between plans 3 and 4 is the presence or absence of an internal 625 KHz guard band between the lower end of the public safety multimedia block and the commercial D block—*i.e.*, at 763 MHz.[25] Depending on whether this 625 KHz guard band is required (in addition to the 1 MHz B block guard band from 762-763 MHz under the MAPS plan),[26] the amount of guard band spectrum separating the public

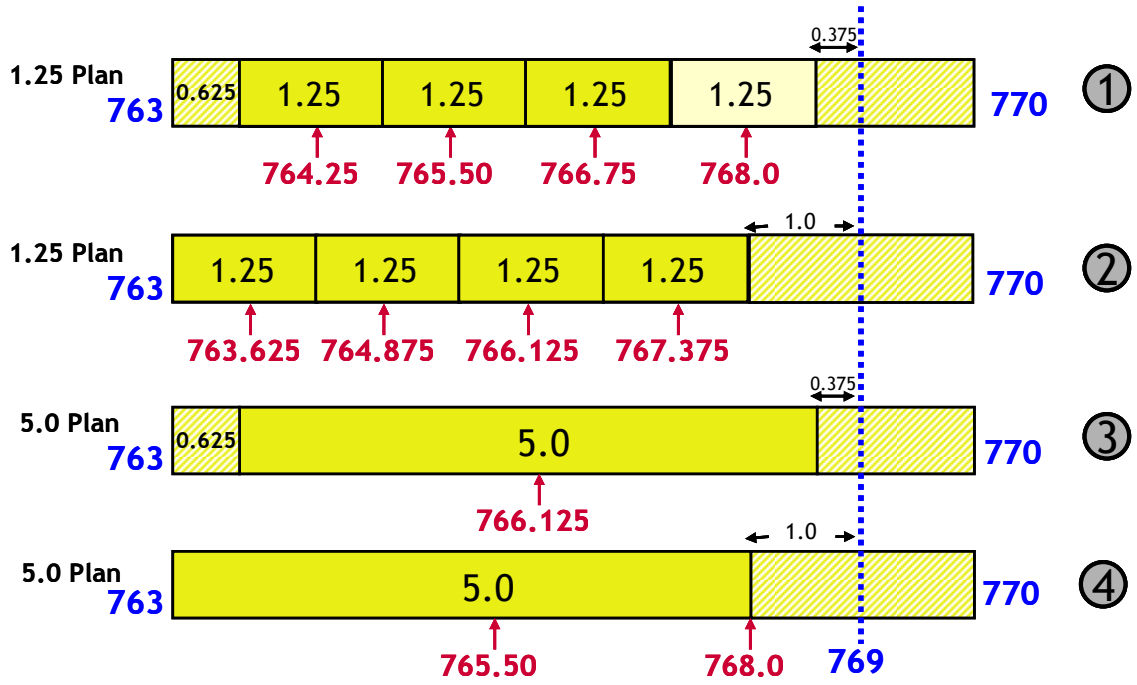
[24] ALU provides broadband channelization scenarios in this Appendix A for both 1.25 MHz and 5 MHz broadband channels in the public safety multimedia block. However, there is insufficient spectrum in this block to support both 1.25 MHz and 5 MHz broadband channels in the same geographic area. Accordingly, the Commission will need to adopt either a 1.25 MHz channel plan or a 5 MHz channel plan for the public safety multimedia broadband block depending on which broadband technology the Commission chooses. If the Commission were to permit public safety agencies the flexibility to independently select the broadband technology that they will deploy (and hence the broadband channelization in the multimedia block in their respective regions), seamless broadband interoperability will be sacrificed. The broadband equipment of certain first responders will not work in the jurisdictions of other first responders that selected a different broadband technology.

[25] ALU uses a tentative value of 625 kHz for this analysis, which is a typical internal guardband in most cdma2000 deployments. The actual required interval is expected to be smaller but is contingent on emission limits and interference criteria established by the FCC. For purposes of simplifying the discussion, this Appendix A only depicts and discusses the lower of the two paired public safety multimedia data blocks under the MAPS plan, *i.e.,* the block running from 763 MHz to 770 MHz. However, the discussion also holds true of the public safety multimedia at the upper end of the 700 MHz band from 793-800 MHz.

[26] Whether this 625 KHz guard band will be required to prevent interference between broadband operations in the public safety multimedia block and commercial operations in both the remaining B and the D blocks will be dependent on the technical rules ultimately adopted for both blocks by the Commission.

safety multimedia block and narrowband blocks can be up to 2 MHz or as low as 1.375 MHz (inclusive in both cases of the 1 MHz guard band between the blocks derived from the extra spectrum obtained from the B block).

700 MHz Public Safety Multimedia Block Broadband Channelization Scenarios



II. AVAILABILITY OF NARROWBAND CHANNELS ON THE U.S.-CANADA BORDER UNDER THE MAPS PLAN

The Commission's selection of which broadband channel plan to use for the public safety multimedia block should be based on the need for an internal guard band within the multimedia block and adjacent to the 1 MHz guard band at 762-763 MHz under the MAPS plan because this, in turn, will determine how much spectrum below 769 MHz will remain unassigned to a broadband channel. Due to Canada's allotment of analog television channels 63 and 68 (*i.e.,* 764-770 MHz and 794-800 MHz) for Canadian narrowband public safety use and Canada's use of channel 64 and 69 (*i.e.,* 770-776 MHz and 800-806 MHz) for analog television, the MAPS plan public safety narrowband channels along the U.S.-Canada border will need to be shifted to the guard band between the public safety multimedia and narrowband blocks at 769-770 MHz (paired with 799-800 MHz). The amount of spectrum in this 1 MHz block (*i.e.,* 769-770 MHz) that can be used for border-region narrowband channels without concern about receiving interference from the adjacent broadband public safety multimedia channels is dependent on the amount of unused spectrum (*i.e.,* spectrum that is not assigned to a broadband channel) that will remain in the multimedia block below 769 MHz to act as a *de facto* guard band. This *de facto* guard band will be needed to protect the border-region narrowband channels operated between 769 MHz and 770 MHz.

For example, if the 625 KHz internal guard band is not needed above 763 MHz to prevent interference between the public safety multimedia block and the commercial D block, then the 1.25 MHz and 5 MHz broadband channels will start at 763.625 MHz and end at 768.25 MHz (as shown in scenarios 2 and 4) leaving 1 MHz between the last broadband channel and the 1 MHz anticipated to be used for border-region narrowband channels at 769-770 MHz. As a result, most, if not all, of 769-770 MHz will be available for border-region narrowband communications even if a fourth 1.25 MHz broadband channel centered on 767.375 MHz (as shown in scenario 2) is used throughout the United States.

By contrast, if a 625 KHz guard band is needed above 763 MHz to prevent interference between the public safety broadband channels and the commercial D block, then the 1.25 MHz and 5 MHz broadband channels will start at 763.625 MHz and end at 768.25 MHz (as shown in scenarios 1 and 3) leaving a 375 KHz buffer between the last broadband channel and the border-region narrowband channels that will occupy the 1 MHz guard band at 769 MHz to 770 MHz. This is unlikely to be a sufficient buffer between the last broadband channel and the border-region narrowband channels in the 1 MHz at 769-770 MHz. Accordingly, the entire 1 MHz likely will not be able to be used for border-region narrowband channels unless the fourth 1.25 MHz broadband channel is not used in the border region for broadband communications. (The 5 MHz broadband channel may still be able to be used in the border area for UMTS because a 5 MHz UMTS channel includes some excess bandwidth.) However, subject to a few exceptions the border region is not densely populated and therefore it seems likely that a fourth 1.25 MHz broadband channel would not be needed by first responders in this region.

III. THE UPPER 700 MHZ BAND A BLOCK MUST BE PRESERVED TO PREVENT INTERFERENCE BETWEEN THE LOWER 700 MHZ BAND COMMERCIAL C BLOCK AND THE UPPER 700 MHZ BAND COMMERCIAL C BLOCK

Under the technical service rules currently applicable to the portion of the Lower 700 MHz C block running between 740-746 MHz ("Lower C") and the portion of the Upper 700 MHz C block running between 747-752 MHz ("Upper C") a guard band appears to be required to prevent interference between Lower C and Upper C communications.[27] Consequently, the

[27] *See*, *e.g.*, 47 C.F.R. § 27.55(b) ("For base and fixed stations operating in the 698-746 MHz band, with an effective radiated power (ERP) greater than 1 kW, the power flux density that would be produced by such stations through a combination of antenna height and vertical gain pattern must not exceed 3000 microwatts per square meter on the ground over the area extending to 1 km from the base of the antenna mounting structure."); 47 C.F.R. § 27.50(c)(1) ("Fixed and base stations are limited to a maximum effective radiated power (ERP) of 50 kW" subject to certain limitations on antenna heights); Relocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), 17 FCC Rcd 1022, ¶¶ 13, 70, & 125 (2002) (adopting a fixed and mobile allocation, in addition to the existing broadcast allocation, for the 698-746 MHz spectrum band and applying Part 27 licensing rules to all fixed, mobile, and new broadcast services in the band, which rules permit licensees to provide "the full range of FDD- and TDD-based wireless services") ("*Lower 700 MHz Service Rules Order*"); *Id.* at ¶ 122 ("We have determined that licensees operating in the Lower 700 MHz Band should be required to

FCC designated the current A block to fulfill this role. The primary reason that the A block is required relates to the ability to deploy the Frequency-Division-Duplex ("FDD") and Time-Division-Duplex ("TDD") access methods anywhere within the Lower C or Upper C pursuant to the Commission's allowance rule.[28] Accordingly, as set forth in more detail below, elimination of the A block, as was proposed under certain band plans that move the C & D block, would likely result in interference between the Lower C and the Upper C.

Irrespective of transmit power limits, the out-of-band-emissions ("OOBE") rule for the Lower C[29] implies similar OOBE to cellular operations. Based upon the power flux density ("PFD") limit established for Lower C operations,[30] a Lower C transmitter can emit 10 dB—more than an equivalent Upper C block transmitter for an equivalent cell tower height. This could be particularly the case if tower heights exceed 30 meters, *e.g.,* in suburban and rural areas. Because Commission rules do not mandate link directions for either the Upper or Lower C bands, the risk of interference between the Lower C and the Upper C becomes more pronounced if external guard bands (*i.e.*, the A block guard bands) are entirely removed. The following scenarios demonstrate that an external guard band between the Lower C and the Upper C is generally required:[31]

(a) The Lower C is an uplink channel (*e.g.,* uses TDD) and the Upper C is a downlink channel. Fixed base stations operating in each of these spectrum blocks are collocated with enough antenna separation. In this scenario, ALU believes that, assuming (i) an internal guard band of 625 KHz in the Upper C and (ii) an equivalent 625 KHz in the Lower C (*e.g.* if a low-chip rate TDD-UMTS is used), a total of 1+2x0.625 or 2.125 MHz guard band will be sufficient to protect against interference.

(b) The Lower C is a downlink channel and the adjacent Upper C is an uplink block. In this scenario, the risk of base station-to-base station interference increases since for comparable heights, the Lower C base station would transmit at a much higher power level. Adjacent interference may result with the exception of low antenna heights, *e.g.,* in dense-urban areas where transmit power levels can be equivalent. Consequently, as a precautionary measure, the A block is needed.

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attenuate the power below the transmitter power (P) by at least 43 + 10 log (P) dB for any emission on all frequencies outside the licensee's authorized spectrum.").

[28] *See Lower 700 MHz Service Rules Order*, at ¶¶ 70, 125; 47 C.F.R. § 27.50; Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, 15 FCC Rcd 20845, ¶ 10 (2000).

[29] *See Lower 700 MHz Service Rules Order*, at ¶ 122.

[30] *See* 47 C.F.R. § 27.55(b).

[31] This analysis is based upon ALU's experience with cdma2000 cellular operations and deployments. The A block guard band is not required for interference protection between the Lower C and the Upper C if mobile technologies deployed in each of these blocks use the spectrum as downlink blocks.

In addition to the above, an external guard band, such as the A block, is also required to protect from interference between the public safety narrowband block, *i.e.*, 770-776 MHz, and the Upper C block running from 777 MHz to 782 MHz. This guard band is required irrespective of the duplexing method deployed in these spectrum blocks. Specifically, if the narrowband block is a downlink block and the Upper C block above 777 MHz is an uplink block, neither collocation nor line-of-sight operations would be feasible.[32]

[32] In view of the practical duplexer isolation specifications applicable to the upper segment of the Upper C, adjacent interference due to high-power narrowband operation will be difficult to mitigate in the absence of an external guard band.